



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

Address: COMMISSIONER FOR PATENTS

P.O. Box 1450

Alexandria, Virginia 22313-1450

www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/522,732	05/09/2005	Gordon Leith Morriss	2340-000375/US	8835
30593 7590 01/13/2009 HARNESS, DICKEY & PIERCE, P.L.C. P.O. BOX 8910 RESTON, VA 20195				
EXAMINER				
KASTURE, DNYANESH G				
ART UNIT		PAPER NUMBER		
3746				
MAIL DATE		DELIVERY MODE		
01/13/2009		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/522,732

Applicant(s)

MORRIS ET AL.

Examiner

DNYANESH KASTURE

Art Unit

3746

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 November 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 3, 5-36 and 39-43 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 3, 5-36 and 39-43 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 January 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Claim Objections

1. The previously made objections to Claim 31 are hereby withdrawn in view of applicant's amendments submitted on November 12, 2008.

Claim Rejections - 35 USC § 112

2. The previously made 112 2nd paragraph rejection of Claim 35 is hereby withdrawn in view of amendments to the claims submitted on November 12, 2008.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 3, 5, 6, 7, 33-35 are rejected under 35 U.S.C. 102(b) as being anticipated by Lupfer et al (US Patent 2,960,038 A) as extrinsically evidenced by Smith (US Patent 3,597,517 A)

5. In Re Claim 1, with reference to Figure 2, Lupfer et al discloses a pump (title) for conveying a pumped fluid (from (56) to (57)) using an actuating fluid (air supplied from (62)), the pump comprising:

- a rigid outer casing (40) defining an interior space
- a tube structure (48) accommodated in the interior space
- the tube structure being flexible (since it is a bellows which "can be formed of fabrics" as stated in Column 2, Line 63) and substantially inelastic: it is well known that bellows can be made of substantially inelastic material as extrinsically evidenced by Smith in Column 1, Lines 13-14: "A method of forming a cylindrical bellows out of substantially inelastic ..."
- an interior of the tube structure defining a pumping chamber for receiving pumped fluid (Column 3, Line 55), the tube structure being movable between laterally expanded and collapsed conditions for varying the volume of the pumping chamber thereby to provide discharge and intake strokes (Column 3, Lines 60-63)
- the tube structure being maintained in a taut condition between the ends thereof (by action of compression spring (74) as stated in Column 3, Lines 16-18: "A compression spring 74 is positioned within chamber 63 to retain bellows 48 expanded in the absence of fluid pressure being applied to the chamber")
- a region of the interior space (63) surrounding the tube structure defining an actuating region for receiving and accommodating actuating fluid (air)
- the pumping chamber being configured to receive pumped fluid via check valve (58) to cause the tube structure to move towards the expanded condition and the

pumping chamber thereby undergoing an intake stroke, the pumping chamber undergoing a discharge stroke via check valve (59) upon collapsing of the tube structure in response to an action of actuating fluid entering the actuating region through air supplying conduit (62)

- wherein one end of the tube structure is closed (plug (49)) and the other end (50) is connected to a port (53) through which pumped fluid enters into and discharges from the pumping chamber as the pumping chamber performs intake and discharge strokes
- the tube structure is movably supported by sliding rod (67) to accommodate longitudinal extension and contraction of the tube structure.

6. In Re claim 3, Lupfer et al discloses that the tube structure (bellows) is supported by spring (74) at the closed end via plate (68) which is attached to the plug (49) and the bellows.

7. In Re claim 5, Lupfer et al discloses that since the rod (67) slides in a bore, and since the rod (67) is connected to the closed end of the bellows, the tube structure (bellows) is therefore movably supported at the closed end.

8. In Re claims 6 and 7, Lupfer et al depicts that the inner wall of the housing (40) defines the boundary of an annular chamber, since the pump body (40) is cylindrical and hollow (Column 2, Lines 51-52) and it surrounds the bellows. The space formed between the plate (68) and the base (41) reads on the actuating chamber. The holes

(69) provide fluid communication between the actuating annulus and actuating chamber.

9. In Re claims 33 and 34, Lupfer et al and Smith as applied to claim 1 discloses all the claimed limitations.

10. In Re claim 35, Lupfer et al discloses that the port (50) through which the fluid enters the pumping chamber is at an opposite end to where the actuating fluid enters the pump at (62).

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claims 8, 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lupfer et al (US Patent 2,960,038 A) as extrinsically evidenced by Smith (US Patent 3,597,517 A) and in view of Caillaud (US Patent 2,971,465 A)

13. In Re claims 8 and 9, Lupfer et al discloses that during the discharge stroke, air is bled from the actuation chamber through conduit (62). Lupfer et al as applied to claim

1 discloses all the claimed limitations except for a device to bleed air from the pumping chamber.

14. Nevertheless, with reference to Figure 5, Caillaud depicts exhaust port (59) to bleed air from the pump. During intake and exhaust strokes, entrapped air can accumulate in the actuating fluid between the flexible tube wall of the pumping chamber and the intermediate cylindrical wall (60). Entrapped air can also accumulate in the actuating fluid between the tubular wall (53) and the intermediate cylindrical wall (60). All entrapped air can be allowed to escape through (59) during either the intake or exhaust strokes by motive force from the pumping fluid or the pumped fluid.

15. It would have been obvious to a person having ordinary skill in the art at the time of the invention to modify the nipple (44) or conduit (50) connected to the pumping chamber of Lupfer et al to incorporate an exhaust port as taught by Caillaud for the purpose of venting entrapped air.

16. Claims 10, 11, 12 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lupfer et al (US Patent 2,960,038 A) as extrinsically evidenced by Smith (US Patent 3,597,517 A) and in view of Kitsnik (US Patent 4,439,112 A)

17. In Re claims 10, 11, 12 and 14 Lupfer et al as applied to claim 1 discloses all the claimed limitations except for the monitoring device to monitor the pump during the intake and discharge stroke, monitor the condition of the tube indirectly or directly at the

closed end of the tube structure, and indicating when an intake/discharge stroke is completed.

18. However, Kitsnik discloses in Column 4, lines 64-68: "The diaphragms 18 and 19 are each provided in a house 23 and 24 in the diaphragms casing 17 and contact, in their outer end positions, indicators 25. Indicators 25 consist of a shaft 26 having a magnet 27 at one end and a plate 28 at the other". These indicators indicate the position of the diaphragm and therefore the status of the intake/exhaust stroke during operation and "indirectly" indicate the position of the closed end of the diaphragm (tube structure).

19. It would have been obvious to a person having ordinary skill in the art at the time of the invention to incorporate the indicators of Kitsnik into the cylindrical structure of Lupfer et al for the purpose of determining the position of the bellows during operation. The position of the bellows (tube structure) during operation is the key to determining whether a failure has occurred.

20. Claims 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lupfer et al (US Patent 2,960,038 A) as extrinsically evidenced by Smith (US Patent 3,597,517 A) and in view of Kitsnik (US Patent 4,439,112 A) and further in view of Eull (US Patent 3,427,987 A)

21. In Re claim 13, Lupfer et al and Kitsnik as applied to Claim 10 discloses all the claimed limitations except monitoring means to monitor the pressure differential between components of the pump.

22. However, Eull discloses a valve adjacent to the inlet and outlet (Column 2, Lines 5-6) that "monitors" the pressure and vents the pressure in a chamber if it is too high.

23. It would have been obvious to a person having ordinary skill in the art at the time of the invention to incorporate the valve of Eull into the apparatus of Lupfer et al modified by Kitsnik for the purpose of safety of the pump components (including the bellows) by keeping them from being exposed to unnecessarily high pressures.

24. Claims 15- 20, 23-26, 28-32, 36, 39 and 41-43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lupfer et al (US Patent 2,960,038 A) as extrinsically evidenced by Smith (US Patent 3,597,517 A) and in view of Caillaud (US Patent 2,971,465 A) and further in view of Voelker (US Patent 3,250,226 A)

25. In Re claims 15 and 16, Lupfer et al as applied to claim 1 discloses all the claimed limitations except for the timing of the delivery of pumped fluid (from a delivery pump) and actuating fluid as set forth in the claim.

26. However, Voelker discloses operation of hydraulic pumps where the operation is effected by a timer (74) as stated in Column 3, Lines 1-3. Caillaud discloses a delivery pump (12).

27. It would have been obvious to a person having ordinary skill in the art at the time of the invention to modify the apparatus of Lupfer et al to incorporate the delivery pump of Caillaud to deliver the fluid to the pumping chamber, and to incorporate the solenoid valves and timer as taught by Voelker for a more precise operation of the pump.

28. In Re claim 17 and 18, Caillaud discloses oil as the actuating fluid (Column 6, lines 37-38).

29. In Re claim 19, Caillaud discloses a hydraulic circuit incorporating a reservoir (22) and a hydraulic pump (12).

30. In Re claim 20, Caillaud discloses a pumping system (12) with an intake valve (19) and an exit valve (26) for regulating delivery. Voelker teaches a timer that controls the opening and closing of the valves.

31. In Re claim 23, Lupfer et al discloses that delivery of the actuating fluid at (62) into the actuating region is opposite the end (50) where pumped fluid enters and discharges from the pumping chamber.

32. In Re claim 24, Lupfer et al discloses that outlet of the actuating fluid at (62) from the actuating region is opposite the end (50) where pumped fluid enters and discharges

from the pumping chamber because the actuating fluid is delivered to and exhausted from the same port (62).

33. In Re claim 25, Voelker discloses two identical pumps having a common output (38) suggesting that two pumps like Lupfer et al have a common output. Voelker also discloses in Column 3, Lines 22-25 that collapsible tube (18) is expanded when collapsible tube (16) is contracted.

34. In Re claim 26 and 36, Voelker discloses in Column 3, Line 47 that the flow of pumped fluid is at a substantially constant volumetric rate.

35. In Re claim 28 and 29, Voelker discloses in Column 2, Lines 66-67: "...constant output hydraulic pump 56..". In transition when one diaphragm pump completes the discharge stroke the other diaphragm pump would have to start its discharge stroke to sustain the constant output of pump since working fluids are generally incompressible. Consequently, the other diaphragm pump will be at full discharge flow before the first diaphragm fully completes its discharge.

36. In Re claim 30, Voelker discloses the two pumps have common delivery device (32) and common supply device (58) with appropriate valves (40, 42, 56, 68).

37. In Re claim 31, 39 and 41 Caillaud discloses the diaphragm pump (16) is closed by valve (46) at the top and therefore the closed end of tube structure (16) is elevated in relation to the other open end during the intake stroke. Similarly the diaphragm pump (18) is closed by valve (46) at the top and therefore the closed end of tube structure (18) is elevated in relation to the other open end during the intake stroke. Lupfer et al, Voelker and Caillaud as applied to claim 25 discloses all the remaining claimed limitations of claim 31.

38. In Re claim 32 and 42, Lupfer et al discloses that delivery and exit of the actuating fluid is at (62) adjacent the closed end.

39. In Re claim 43, Lupfer et al and Smith as applied to claim 1 discloses that the tube structure is flexible and substantially inelastic.

40. Claims 17, 21, 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lupfer et al (US Patent 2,960,038 A) as extrinsically evidenced by Smith (US Patent 3,597,517 A) in view of Caillaud (US Patent 2,971,465 A) and in view of Voelker (US Patent 3,250,226 A) and further in view of Taga (US Patent 5,964,580 A)

41. In Re claim 17 and 21, Lupfer et al, Caillaud and Voelker as applied to claim 15 discloses all the claimed limitations except for the actuating fluid being water.

42. However, Taga discloses in Column 5 lines 43-44: "hydraulic fluid, e.g. silicone oil, fluorine oil, pure water, or the like, supplied from the pressurizing means".

43. It would have been obvious to a person having ordinary skill in the art at the time of the invention to use water as the driving fluid as taught by Taga instead of oil as the driving fluid in the apparatus of Lupfer et al modified by Caillaud and Voelker as an alternate actuating means to pump the driven fluid.

44. In Re claim 22, Figure 5 of Caillaud discloses a reservoir (66) at an elevated location.

45. Claims 27 and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable Lupfer et al (US Patent 2,960,038 A) as extrinsically evidenced by Smith (US Patent 3,597,517 A) in view of Caillaud (US Patent 2,971,465 A) and in view of Voelker (US Patent 3,250,226 A) and further in view of Kahr et al (US Patent 2,027,104 A)

46. In Re claim 27, Lupfer et al, Smith, Voelker and Caillaud as applied to claim 25 discloses all the claimed limitations except for the duration of the discharge stroke is longer than the intake stroke.

47. However, Kahr et al discloses on page 8, second column, Lines 3-10: " hydraulic device for oil well pumping, a cylinder provided with a reciprocating piston, a variable capacity pump for delivering fluid to the cylinder to actuate the piston, and means

synchronized with the pump for controlling the discharge therefrom and for imparting to the, piston a working stroke of variable velocity and of longer duration than the return stroke"

48. It would have been obvious to a person having ordinary skill in the art at the time of the invention to substitute the piston pump and method of operating the pump with a longer working stroke than the return stroke as taught by Kahr et al into the apparatus of Lupfer et al modified by Voelker and Caillaud for the purpose of improved readiness for the compression stroke (discharge) following the quick expansion (compression) stroke by allowing for the settling of transient fluid activity.

49. In Re claim 40, Lupfer et al, Smith, Voelker, Caillaud and Kahr et al as applied to claim 27 discloses all the claimed limitations. MPEP 2112.02 states "Under the principles of inherency, if a prior art device, in its normal and usual operation, would necessarily perform the method claimed, then the method claimed will be considered to be anticipated by the prior art device" .

Conclusion

50. Applicant's amendment changed the scope of the claims: For example, Claim 4 (now cancelled) had the phrase "the closed end of the tube structure is movably supported", however the portion "closed end of" in the phrase has been removed from the newly amended Claim 1 and the claim only recites "tube structure is movably

supported". Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a).

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **DNYANESH KASTURE** whose telephone number is (571)270-3928. The examiner can normally be reached on Mon-Fri, 9:00 AM to 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Devon Kramer can be reached on (571) 272 - 7118. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Devon C Kramer/
Supervisory Patent Examiner, Art
Unit 3746

DGK